

WE CLAIM:

1. A method for leak testing the ventilation system of an environmental enclosure, the method comprising:
 - inducing air surrounding the enclosure to flow through the ventilation system
 - 5 and into the enclosure to establish positive pressure in the enclosure;
 - filtering a tracer gas from the air flowing into the enclosure with a gas filter positioned in the ventilation system, the tracer gas comprising a gas naturally present in the air surrounding the enclosure; and
 - detecting for the presence of the tracer gas inside the enclosure.
- 10 2. The method of claim 1, wherein the tracer gas comprises carbon dioxide.
3. The method of claim 2, wherein the filter comprises a filter housing
- 15 and soda lime contained in the housing for absorbing carbon dioxide from the air flowing through the filter.
4. The method of claim 1, wherein the filter is capable of filtering all of the tracer gas flowing through the filter.
- 20 5. The method of claim 1, wherein:
 - the tracer gas comprises carbon dioxide; and
 - the filter is capable of filtering all of the carbon dioxide from the air flowing through the filter.
- 25 6. The method of claim 1, wherein the enclosure comprises an operator cab.
7. The method of claim 1, further comprising:
 - 30 determining the expected concentration of tracer gas inside the enclosure due to losses through the filter;

measuring the lowest achievable concentration of tracer gas inside the enclosure;

detecting for the presence of leaks in the ventilation system by comparing the lowest achievable concentration of tracer gas inside the enclosure to the expected
5 concentration of tracer gas inside the enclosure due to losses through the filter.

8. The method of claim 1, further comprising:

calculating the time required for the concentration of the tracer gas inside the enclosure to reduce to a predetermined level at a predetermined leakage; and
10 measuring the actual time required for the concentration of the tracer gas inside the enclosure to reduce to the predetermined level to determine whether the leakage of the ventilation system is less than the predetermined leakage.

9. The method of claim 1, wherein the tracer gas comprises nitrogen.
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10. The method of claim 1, wherein the tracer gas comprises oxygen.

11. The method of claim 1, wherein the tracer gas comprises argon.
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12. A method for leak testing the ventilation system of an environmental enclosure, the method comprising:

placing a filter in the ventilation system for filtering a tracer gas from the air flowing through the filter, the tracer gas comprising a gas naturally present in the air
25 surrounding the enclosure;

inducing air outside of the enclosure to flow through the ventilation system and into the enclosure so as to establish positive pressure inside the enclosure;
measuring the concentration of tracer gas inside the enclosure; and
detecting for the presence of leaks in the ventilation system from the
30 concentration of the tracer gas inside the enclosure.

13. The method of claim 12, wherein the tracer gas comprises carbon dioxide.

14. The method of claim 13, wherein the filter comprises soda lime for
5 filtering carbon dioxide from the air flowing through the filter.

15. The method of claim 12, wherein the filter is capable of filtering all of the tracer gas flowing through the filter.

10 16. The method of claim 12, wherein:
the tracer gas comprises carbon dioxide; and
the filter is capable of filtering all of the carbon dioxide from the air flowing through the filter.

15 17. The method of claim 12, comprising:
determining the expected concentration of tracer gas inside the enclosure due to losses through the filter; and
comparing the measured concentration of tracer gas inside the enclosure to the expected concentration of tracer gas inside the enclosure due to losses through
20 the filter to determine whether there are any leaks in the ventilation system.

18. A system for leak testing the ventilation system of an environmental enclosure used in a polluted atmosphere, the system comprising:
a gas filter configured to fit in the ventilation system of the enclosure and
25 capable of filtering a tracer gas from air flowing through the filter, the tracer gas comprising a gas naturally present in the air surrounding the enclosure; and
a gas detector for detecting the presence of the tracer gas inside the enclosure.

30 19. The system of claim 18, wherein the gas filter is a carbon dioxide filter for removing carbon dioxide from the air flowing into the enclosure.

20. The system of claim 19, wherein the carbon dioxide filter is capable of removing all of the carbon dioxide from the air flowing through the filter.

21. The system of claim 19, wherein the filter comprises soda lime for
5 absorbing carbon dioxide from the air flowing through the filter.

22. The system of claim 21, wherein the filter comprises a first and second electrostatic filter elements, with the soda lime interposed between the electrostatic filter elements.

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23. The system of claim 18, wherein the enclosure is an operator cab of a vehicle.

24. The system of claim 18, wherein the gas filter is a nitrogen filter for
15 removing nitrogen from the air flowing into the enclosure.

25. The system of claim 18, wherein the gas filter is an oxygen filter for removing oxygen from the air flowing into the enclosure.

20 26. The system of claim 18, wherein the gas filter is an argon filter for removing argon from the air flowing into the enclosure.